

Book Reviews

Nucleic Acids. By Shawn Doonan (University of East London). Royal Society of Chemistry, Cambridge. 2004. vi + 185 pp. 19 × 24 cm. £14.95. ISBN 0-85404-481-7.

As part of a series of modular, one-topic texts on the fundamental concepts in chemistry, this book provides a complete introduction to the field of nucleic acids chemistry—properties, structures, functions, and analysis. While appropriate for the undergraduate level, it would also make an excellent review or reference. Doonan does an excellent job at focusing on the chemistry of the subject while giving the reader enough information and background in biochemistry and molecular biology to appreciate the fundamental roles these molecules play at the interfacial domain and in the practical applications of bioanalysis and forensics.

The text is very well organized in terms of pedagogical approach (introductory concepts are followed by increasingly more conceptual and applied subjects), and Doonan provides a highly structured format to guide the student. Side notes, “Box” notes, chapter “Aims”, and chapter summaries provide structure for the student to diverge into areas of special interest without losing sight of the main concepts. Throughout the text the author provides rich historical details regarding the development of our current understanding of nucleic acid structure and function that augment the text and give the student an appreciation for the discipline. Supporting references are provided for the enthusiastic reader and cover seminal papers.

“Worked problems” are provided within each chapter; however, the extent to which they are worked out for the student’s benefit is minimal. The majority of these worked problems involve lower level thinking operations, recall of facts presented, and simple calculations without context. Faculty who choose to use the text at the undergraduate level will likely need to supplement the worked problems extensively with additional experiences for the students.

End of chapter problems are richer in variety and include a significant number of questions that guide the student to learn to use Internet resources in a variety of ways. Doonan spends significant time in the text leading the students to use the Internet resources proficiently; however, because of the rate of change in on-line resources and computer technology, it is questionable whether the text’s instruction will be useful over time. Upgrade editions in this regard are already needed (Protein Explorer for Rasmol, for example), and perhaps an ancillary to the text would be more effective in this case.

A careful editing of the book would be advised for the next edition to correct inconsistencies, typographical errors, and problems with figures. Most of these are minor, and only one would be of real concern to the undergraduate instructor: the presentation of amino acid and polypeptide protonation. Rather than showing the N- and C-termini in the zwitterionic form (assumed at pH 7.4), the text shows an NH_2 -COOH structure, physiologically impossible because of their relative acidity.

The notion of teaching undergraduate chemistry through topical modules is a novel approach, and this element, *Nucleic Acids*, is certainly an attractive piece of such a curriculum. The text would be of great interest to undergraduates struggling to understand interdisciplinary research and real-world problems through the lens of chemistry.

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